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X-ray edge singularity in resonant inelastic x-ray scattering (RIXS)[1] ROBERT MARKIEWICZ, Northeastern University, JOHN REHR, University of Washington, ARUN BANSIL, Northeastern University — We develop a lattice model based on the theory of Mahan, Noziéres, and de Dominicis for x-ray absorption to explore the effect of the core hole on the RIXS cross section. The dominant part of the spectrum can be described in terms of the dynamic structure function $S(q, \omega)$ dressed by matrix element effects, but there is also a weak background associated with multi-electron-hole pair excitations. The model reproduces the decomposition of the RIXS spectrum into well- and poorly-screened components. An edge singularity arises at the threshold of both components. Fairly large lattice sizes are required to describe the continuum limit.

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